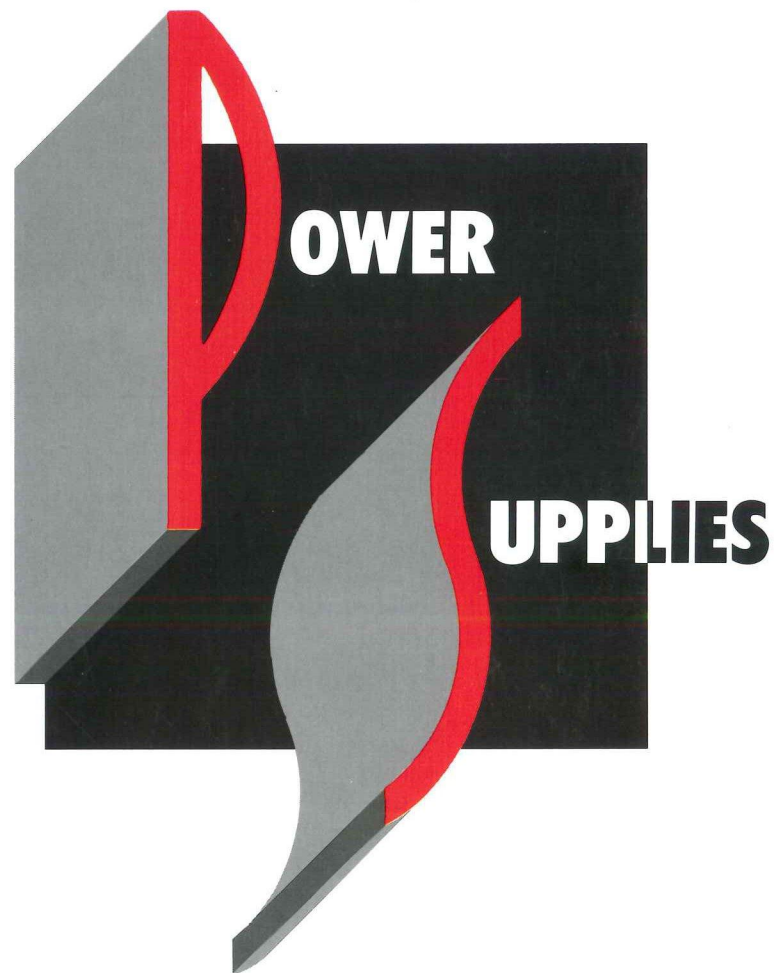


KENWOOD

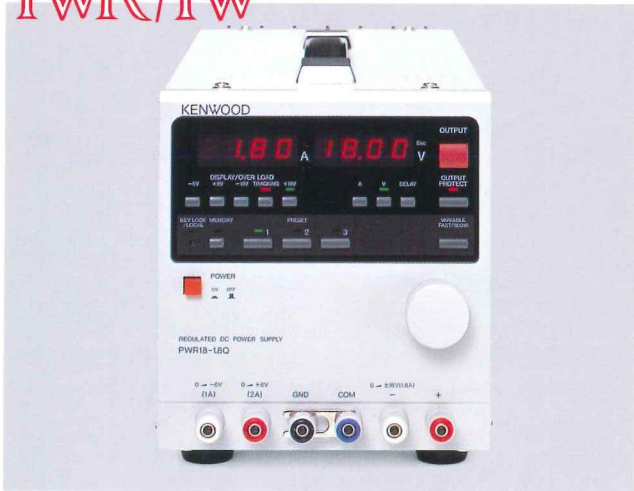
REGULATED DC POWER SUPPLIES



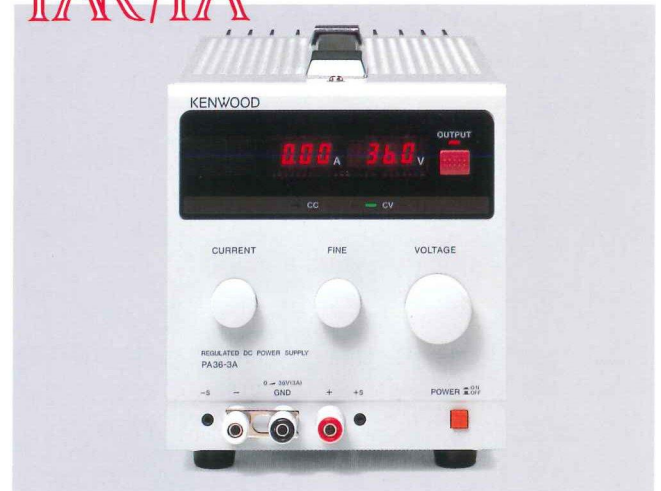
TEST & MEASURING INSTRUMENT

Kenwood's Regulated DC

PWR / PW SERIES



PAR / PA SERIES



PD SERIES



PR SERIES



PS SERIES



Comparison Chart for Regulated DC Power Supplies

Model	PWR series	PW series	PAR series	PAA series	PD series	PRA series	PR series	PS series
Multiple output (2~4 outputs)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Dual-tracking	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Digital display	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Presetting of V/A Value and Delay	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Output on/off	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Remote-sensing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
GPIB control (IEEE-488)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Computer control (RS-232C)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Master operation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Output on/off control	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Single-control parallel operation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Single-control series operation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Control by an EXT. voltage	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Control by an EXT. resistance	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

1. Only PR30-3W
2. Voltage only

Power Supplies

Index

VOLTAGE RANGE	OUTPUT VOLTAGE		MODEL	PAGE
		CURRENT		
6V	0 to 6V	0 to 60A	PS6-60	11
		0 to 120A	PS6-120	
10V	0 to 10V	0 to 35A	PS10-35	11
		0 to 70A	PS10-70	
18V	0 to ±18V & 0 to 6V	0 to ±1A & 0 to 5A	PW18-1T	3
	0 to 18V	0 to 1.2A	PWR-18-1T	9
			PA18-1.2A	5
	0 to ±18V, 0 to 8V & 0 to -6V	0 to ±1.8A, 0 to 2A & 0 to -1A	PW18-1.8Q	3
			PWR18-1.8Q	
	0 to ±18V	0 to ±2A	PW18-2	9
	0 to 18V	0 to 2A	PWR18-2	
	0 to 18V, 0 to 36V, 0 to 8V	0 to 2A, 0 to 1A, 0 to 2A	PWR18-2TP	
	0 to 18V	0 to 3A	PR18-3A	9
	0 to 18V	0 to 5A	PA18-3A	5
	0 to 18V	0 to 5A	PR18-5A	9
	0 to 18V	0 to 5A	PAR18-5	5
	0 to 18V	0 to 10A	PD18-10	7
	0 to 18V	0 to 20A	PD18-10D	
PD18-20				
PD18-20D				
PD18-30				
0 to 18V	0 to 30A	PD18-30D		
20V	0 to 20V	0 to 18A	PS20-18	11
		0 to 36A	PS20-36	
		0 to 54A	PS20-54	
30V	0 to 30V	0 to 3A	PR30-3P	9
		0 to 6A	PR30-6P	
		0 to ±30V	PR30-3W	
36V	0 to ±36V	0 to ±1A	PW36-1	3
	0 to 36V	0 to 1.2A	PWR36-1	9
			PA36-1.2A	5
	0 to 36V	0 to 3A	PR36-3A	9
			PA36-3A/PAR36-3	5
	0 to 36V	0 to 10A	PD35-10	7
			PD35-10D	11
			PS36-10	11
	0 to 36V	0 to 20A	PD35-20	7
			PD35-20D	11
PS36-20			11	
0 to 36V	0 to 30A	PS36-30	11	
56V	0 to 56V	0 to 6A	PD56-6	7
			PD56-6D	
	0 to 56V	0 to 10A	PD56-10	
			PD56-10D	
60V	0 to 60V	0 to 6A	PS60-6	11
		0 to 12A	PS60-12	
		0 to 18A	PS60-18	
70V	0 to 70V	0 to 1A	PR70-1A	9
			PA70-1A	5
110V	0 to 110V	0 to 3A	PD110-3	7
			PD110-3D	
	0 to 110V	0 to 5A	PD110-5	
			PD110-5D	
250V	0 to 250V	0 to 0.42A	PA250-0.42A	5
			PR250-0.42A	9

PWR/PW SERIES

Microcomputer Control, Dual-Tracking, and Multiple Outputs

Two Series to Select from Six Models of the PWR Series for Systems Use and Four Models of the PW Series for Stand-alone Use.

PWR18-1.8Q

±18V/±1.8A, 8V/2A, -6V/-1A

PWR18-1T

±18V/±1A, 6V/5A

PWR18-2

±18V/±2A

PWR18-2TP

+18V/+2A, +36V/+1A, +8V/+2A

PWR18-2P

+18V/+2A

PWR36-1

±36V/±1A

PW18-1.8Q

±18V/±1.8A, 8V/2A, -6V/-1A

PW18-1T

±18V/±1A, 6V/5A

PW18-2

±18V/±2A

PW36-1

±36V/±1A



The PWR/PW Series power supplies are multifunction, dual-tracking CV/CC power supplies featuring a built-in microprocessor. And they provide multiple-output performance for experimental and systems use that rivals the previous approach of using several single-output supplies. The PW Series consists of highly versatile stand-alone power supplies, and the PWR Series provides in addition a listener function that enables digital-signal remote control of all functions and a talker function enables readback of not only all setting conditions, but of output voltage and current as well. This makes the PWR power supplies fully remotely controllable, multiple-output regulated-voltage/current power supplies.

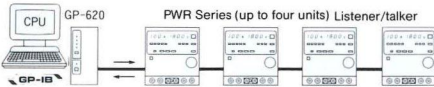
SPECIFICATIONS

Model	PWR18-1.8Q & PW18-1.8Q	PWR18-1T & PW18-1T	PWR18-2 & PW18-2	PWR18-2TP	PWR18-2P	PWR36-1 & PW36-1
Output voltage	0 ~ ±18V 0 ~ +8V 0 ~ -6V	0 ~ ±18V 0 ~ +6V	0 ~ ±18V	0 ~ +18V 0 ~ +36V 0 ~ +8V	0 ~ +18V 0 ~ +18V	0 ~ ±36V
Output current	0 ~ ±1.8A 0 ~ +2A 0 ~ -1A	0 ~ ±1A 0 ~ +5A	0 ~ ±2A	0 ~ +2A 0 ~ +1A 0 ~ +2A	0 ~ +2A	0 ~ ±1A
• Voltage regulation characteristics						
Line regulation	1mV			1mV (+18V), 2mV (+36V), 1mV (+8V)	1mV	2mV
Load regulation	3mV	2mV	3mV	3mV (+18V), 2mV (+36V), 3mV (+8V)	3mV	2mV
Ripple/noise	0.5mVms					
• Current regulation characteristics						
Line regulation	2mA (typ.)					
Load regulation	10mA (typ.)					
• Digital meter display						
Voltage display	Max. 19.99V (fixed range: LED)			Max. 19.99V (39.99V/+36V) (Fixed range: LED)		Max. 19.99V/99.9V Autoranging
Current display	Max. 9.99A (fixed range: LED)					
• Power consumption						
VA/Watts	240VA/213W	210VA/176W	210VA/165W	253VA/208W	210VA/165W	190VA/145W
• Line voltage						
Voltage	100/120/220/240VAC ±10% (max. 250V), 50/60Hz					
• Dimensions & Weight						
Dimensions	II size		I size	II size	III size	II size
Weight	8.2kg	8.1kg	6.4kg	8.1kg	6.4kg	
I size 104(W) × 147(H) × 330(D) mm Max. 109(W) × 167(H) × 350(D) mm II size 138(W) × 147(H) × 372(D) mm Max. 143(W) × 167(H) × 392(D) mm III size 104(W) × 147(H) × 300(D) mm Max. 109(W) × 167(H) × 350(D) mm						

The PWR system enables flexible configurations to suit a wide range of applications.

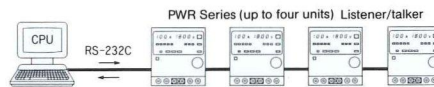
Expandable to systems applications using GPIB control

The GP-620 GPIB Adaptor can be added to adapt PWR supplies into systems application, providing listener/talker capability that enables not only full control of all power supply functions, but readout of output voltage and current values. By using IDs, control of up to four power supplies is possible, enabling a highly safe system configuration.



Expandable to computer-controlled programmable operation

By making direct connection to an external computer, it is possible to use these power supplies as programmable power supplies for application such as simulation testing. This simplifies the job of implementing a power supply system with all functions remotely controlled and readout of output voltage and current.



The PWR/PW Series Combines Advanced Functions with Amazingly Simple Operation and Safety

Dual tracking

In addition to dual tracking, in which positive and negative voltages track from zero volts simultaneously, positive and negative voltages can be set independently.

Simultaneous digital display of voltage and current

Output voltage and current are indicated simultaneously on red LED displays, providing an easily readable display not possible in dark locations with dim LCDs.

Presetting of voltage and current value pairs (3 points)

Three sets of frequently used voltages and currents (V-A pairs) can be preset, thereby enabling quick setup of the power supply output. (The PWR18-1.8Q, PWR18-1T, PW18-1.8Q and PW18-1T additionally feature presettable on/off delay time.)

One-dial control

To simplify operation, all condition setting are selected at push of a button. With a single dial being used to set all values. In addition, output voltage and current can be set to resolutions of 10mV and 10mA, respectively. The selected key is indicated by an LED.

Key-lock

A key-lock function can be used to forcibly hold all setting values,

thereby preventing the inadvertent changes of values during testing when you leave the power supply unattended.

Dual safety

When the output is on, if a preset switch or variable switch is changed or tracking switch is set to on, a protection circuit cuts off the supply output, to prevent output of unexpected voltages and currents (when the output protect switch is set to on.).

Delay time

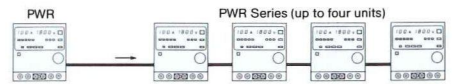
For multiple-output power supplies, when more than one of the outputs are switching on or off simultaneously, the testing device or circuit being supplies may be influenced unexpectedly, running the risk of damage. To prevent this, the delay time feature enables you to turn on a given output only after a delay time, and turn this output off this same delay time before the other outputs (The PWR18-1.8Q, PWR18-1T, PW18-1.8Q and PW18-1T only).

Natural cooling

An energy-efficient design has minimized the temperature rise within these supplies, this combining with a carefully thought-out structure to eliminate the need for a cooling fan, thereby reducing noise, vibration, and pull-in of dust.

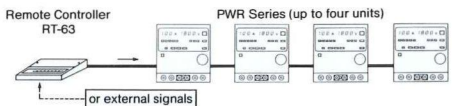
Master-slave operation

When including these supplies as part of a system, single control is possible by assigning one unit of a number of similar supplies as the master supply to control all functions of up four slave supplies.



External remote control

By adding the RT-63 Remote Controller, it is possible to remotely switch the preset (output values), the outputs, and the output protect on/off of up to four units from a remote controller. It is also possible to perform remote control with contact or logic signals via RT-63.



Rack-size package

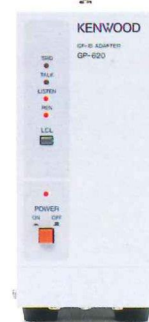
On the assumption that these power supplies will be used in testing and systems application, they have been designed in a case that meets EIA rack standards.

Last-one memory

A backup function holds setting values, so that when the power is switched on the values in effect when power was switched off are set automatically, eliminating the need to make setting once again.

CV/CC

Whether for constant voltage or current, operation is guaranteed from zero through the rated value.



GP-620
GPIB Adaptor
(for PWR Series)

The GPIB provides an interface usable with the Kenwood PWR Series via the GPIB bus in making settings, current settings and controlling the output switch.



RT-63
Remote controller
(for PWR Series)

PAR / PAA SERIES

Compact, High-Performance CV/CC Power Supplies

The PAR and PAA Series Show What Power Supply Reliability and Stability Are All About.

- PAR18-5
18V/5A
- PAR36-3
36V/3A
- PA18-1.2A
18V/1.2A
- PA18-3A
18V/3A
- PA36-1.2A
36V/1.2A
- PA36-3A
36V/3A
- PA70-1A
70V/1A
- PA250-0.42A
250V/0.42A



Designed to provide both compactness and high reliability, the PAA Series of series-regulated constant-voltage/current power supplies provides simultaneous digital display of both output voltage and current. There are two 18V types, two 36V types, one 70V type, and one 250V type, enabling selection for a variety of applications. The outputs can be boosted by single-control serial and parallel connections, and remote control enables easy use of these compact power supplies in applications such as R&D, aging and as a system power supplies.

The PAR Series is a micro-computer controlled versatile CV/CC power supply which incorporates reliable power remote sensing terminals.

SPECIFICATIONS

Model	PA18-1.2A	PA18-3A	PA36-1.2A	PA36-3A	PA70-1A	PA250-0.42A	PAR18-5	PAR36-3
Output voltage	0 ~ 18V		0 ~ 36V		0 ~ 70V	0 ~ 250V	0 ~ 18V	0 ~ 36V
Output current	0 ~ 1.2A	0 ~ 3A	0 ~ 1.2A	0 ~ 3A	0 ~ 1A	0 ~ 0.42A	0 ~ 5A	0 ~ 3A
● Voltage regulation characteristics								
Line regulation	1mV		2mV	5mV	15mV	2mV		
Load regulation	2mV	3mV	2mV	4mV	5mV	15mV	5mV	4mV
Ripple/ noise	0.5mVrms				1mVrms	2.5mVrms	0.5mVrms	
● Current regulation characteristics								
Line regulation	2mA				1mA	4mA (Type)	3mA (Type)	
Load regulation	10mA		15mA	10mA	5mA	20mA (Type)	15mA (Type)	
● Digital meter display								
Voltage display	Max. 19.99V (fixed range)		Max. 19.99V/99.9V (Autoranging)		Max. 199.9V/990V (Autoranging)	Max. 19.99V (Fixed: LED)	Max. 39.99V (Fixed: LED)	
Current display	Max. 9.99A (fixed range)				Max. 999mA	Max. 9.99A (Fixed: LED)		
● Power consumption								
VA/Watts	62VA/45W	140VA/105W	105VA/80W	250VA/185W	150VA/113W	187VA/150W	264VA/213W	
● Line voltage								
Voltage	100/120/220/240VAC ±10% (max. 250V), 50/60Hz							
● Dimensions & Weight								
Dimensions	S size	M size	S size	L size	M size	L size	K size	
Weight	4.0kg	5.9kg	4.6kg	8.6kg	6.0kg	7.0kg	8.0kg	

S size 104(W) × 147(H) × 180(D) mm Max. 108(W) × 161(H) × 200(D) mm
M size 104(W) × 147(H) × 215(D) mm Max. 108(W) × 167(H) × 265(D) mm
L size 138(W) × 147(H) × 230(D) mm Max. 142(W) × 167(H) × 290(D) mm
K size 138(W) × 147(H) × 372(D) mm Max. 143(W) × 167(H) × 392(D) mm

Low ripple and noise

Series regulation achieves extremely low ripple and noise, as well as excellent temperature characteristics and electrical performance.

Simultaneously digital readout of both voltage and current

Voltage is displayed on a 3-1/2-digit LED display (autoranging, maximum display: 19.99V), and current is displayed on a 3-digit LED display, enabling checking of both voltage and current settings simultaneously. Constant-voltage and constant-current operation is indicated by green and red LEDs, respectively.

Series and parallel connectable

Several power supplies can be connected in series to boost output voltage capability, or in parallel to boost output current capability. In addition, with either connection method, master-slave operation enables the output to be controlled from just one of the thus-connected supplies.

Floating output

Because the output terminals are floating, operation is possible as either a positive or negative supply. Output sensing terminals are provided on the front panel for precise setting of the voltage actually applied to the load.

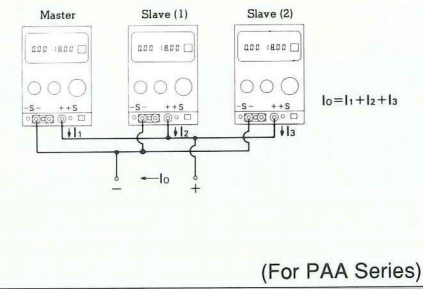
Full remote control

A remote-control connector is provided on the rear panel, enabling external contact-closure signals to perform output on/off control. In addition, the output voltage or current can be controlled by either an external voltage or resistance.

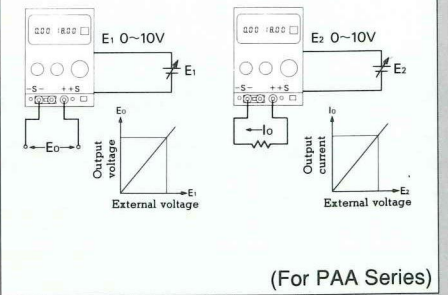
GP-610A
 GPIB Adaptor (for PA Series)
 By using the GP-610A GPIB Adaptor GPIB control of the output on/off status, the output voltage, and the output current is possible.



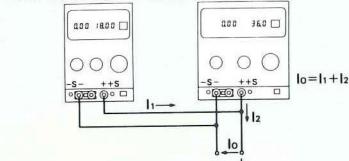
Single-Control Parallel Operation



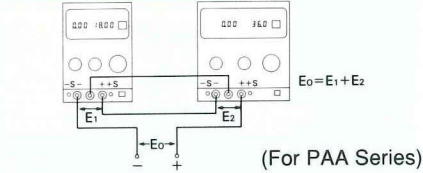
Control by an External Voltage



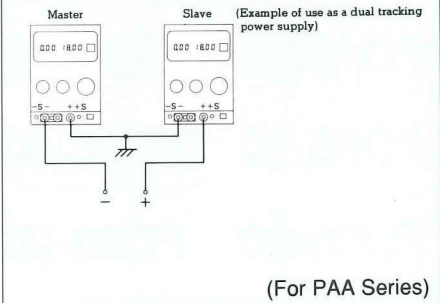
Parallel Connection



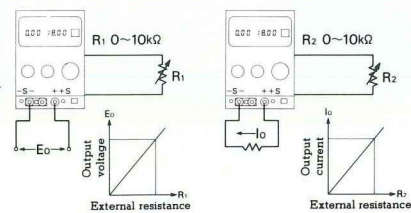
Series Connection



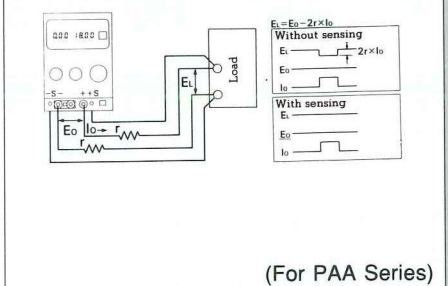
Single-Control Series Operation



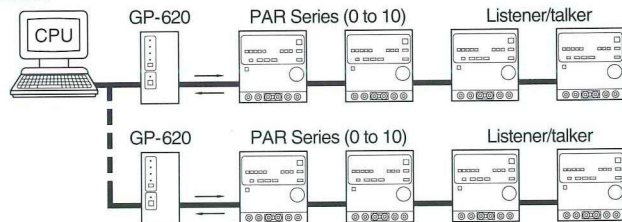
Control by an External Resistance



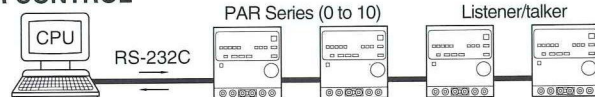
Remote Sensing



GPIB CONTROL



COMPUTER CONTROL



Advanced Technology Throughout, Including Unique Phase Control Technique

The Phase Control Technique enables High-Stability and Large Capacity.

PD18-10 18V/10A	PD18-10D 18V/10A
PD18-20 18V/20A	PD18-20D 18V/20A
PD18-30 18V/30A	PD18-30D 18V/30A
PD35-10 36V/10A	PD35-10D 36V/10A
PD35-20 36V/20A	PD35-20D 36V/20A
PD56-6 56V/6A	PD56-6D 56V/6A
PD56-10 56V/10A	PD56-10D 56V/10A
PD110-3 110V/3A	PD110-3D 110V/3A
PD110-5 110V/5A	PD110-5D 110V/5A



The PD Series power supply is employing a unique phase control technique which enables high-stability and large-capacity. There are two types of display you can choose, meter indicators or digital displays, for the purpose of usage. The remote control function is also provided and it enables easy use in applications such as R&D, aging and as a system power supply. By using GP-610, GPIB Adaptor, most of the functions are controlled by computer.



High stability and large capacity

A unique phase control method which used a built-in pre-regulator ensures fast response and efficient high-stability supply of high currents.

High efficiency and reliability

The phase control method is combined with a choke-input filter to provide excellent regulation, low ripple and low noise—all at a high efficiency level.

High-accuracy voltage setting

The output voltage is settable using a ten-turn potentiometer, enabling smooth, high-precision setting.

Remote sensing

A remote sensing function is provided to compensate for the voltage drop in the resistance of the leads from the power supply to the load.

Remote control

The output voltage (and current) can be controlled by means of an external voltage (or resistance), enabling remote control of output.

Over-voltage protection

Over-voltage protection shuts the power off and disconnects the load

to prevent damage caused by misoperation.

Voltage/current limiting

The voltage or current to be limit is presetable and LED shows in operational area.

Series and parallel connectable

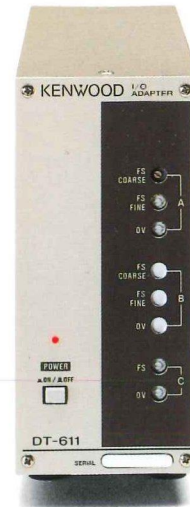
Several power supplies can be connected in series to boost output voltage capability, or in parallel to boost output current capability. In addition, with either connection method, master-slave operation enables the output to be controlled from just one of the thus-connected supplies.

Output voltage on/off

The output switch can be used to electrically turn the output voltage on and off.

- **Excellent temperature characteristics and transient response.**
- **Detection of over-voltage, over-current and over-heating conditions protects power supply circuitry.**
- **Three-terminal floating output.**
- **Forced-air fan cooling.**

GP-610D
GPIB Adaptor (for PD Series)
This interface is for GPIB operation, enabling to control voltage and current settings.



DT-611
I/O Adaptor (for PD Series)
By using this interface, the output voltage and current of PD Series can be controlled by output signal from computer I/O port.

SPECIFICATIONS

Model	PD18-10 & PD18-10D	PD18-20 & PD18-20D	PD18-30 & PD18-30D	PD35-10 & PD35-10D	PD35-20 & PD35-20D	PD56-6 & PD56-6D	PD56-10 & PD56-10D	PD110-3 & PD110-3D	PD110-5 & PD110-5D
Output voltage	0~18V			0~36V		0~56V		0~110V	
Output current	0~10A	0~20A	0~30A	0~10A	0~20A	0~6A	0~10A	0~3A	0~5A

● Voltage regulation characteristics

Line regulation	0.005%+1mV									
Load regulation	0.005%+1mV	0.005%+2mV		0.005%+1mV	0.005%+2mV	0.005%+1mV	0.005%+2mV	0.005%+1mV		
Ripple/noise	0.5mVrms									

● Current regulation characteristics

Line regulation	1mA	5mA		1mA	5mA	1mA	3mA	1mA		
Load regulation	5mA									

● Meter

Voltmeter	0~18Vf.s.			0~36Vf.s.		0~56Vf.s.		0~110Vf.s.	
Ammeter	0~10Af.s.	0~20Af.s.	0~30Af.s.	0~10Af.s.	0~20Af.s.	0~6Af.s.	0~10Af.s.	0~3Af.s.	0~5Af.s.

● Digital meter display (D type only)

Voltage display	Max. 19.99V/199.9V two automatically switched ranges									
Current display	Max. 19.99A or 9.99A fixed range									
	19.99A	99.9A		19.99A	99.9A	19.99A				

● Power Consumption

VA/Watts	530VA/360W	1000VA/620W	1400VA/930W	830VA/560W	1600VA/1000W	800VA/500W	1250VA/800W	800VA/500W	1250VA/800W
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● Line voltage

Voltage	100/120/220/240VAC ±10%, 50/60Hz									
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● Dimensions & Weight

Dimensions	I size	III size	IV size	I size	III size	I size	II size	I size	II size
Weight	12kg	19kg	24kg	14kg	23kg	14kg	18kg	14kg	18kg

I size 208(W)×147(H)×300(D) mm
 II size 208(W)×147(H)×348(D) mm
 III size 208(W)×147(H)×420(D) mm
 IV size 208(W)×147(H)×457(D) mm

Max. 208(W)×168(H)×346(D) mm
 Max. 208(W)×168(H)×394(D) mm
 Max. 208(W)×168(H)×483(D) mm
 Max. 208(W)×168(H)×520(D) mm

PRA / PR SERIES

Compact, Convenient Constant-Voltage/Constant-Current Power Supplies

PR-A series, DC Constant Voltage/Constant Current Power Supplies

PR Series Multiple-output DC Constant Voltage/Constant Current Power Supplies

PR18-1.2A

18V/1.2A

PR-18-3A

18V/3A

PR18-5A

18V/5A

PR36-1.2A

36V/1.2A

PR36-3A

36V/3A

PR70-1A

70V/1A

PR250-0.42A

250V/0.42A

PR30-3P

30V/3A

PR30-6P

30V/6A

PR30-3W

± 30V/ ± 3A



PR-A Series constant voltage/constant current power supplies which employ the series regulator system were developed to combine compact size with an excellent performance and outstanding reliability. To meet the differing requirements of engineers in different fields, seven models are available, three 18 V models, two 36 V models, one 70 V model and one 250 V model. Whether you use them on their own or in a more complex configuration with serial or parallel connection, these power supplies are easy to use. These compact and light weight power supplies are designed for rack mounting but are also suitable for bench top use.

The PR Series of constant voltage/constant current power supplies are compact, high performance units using the series regulator system for easy operation, high reliability and stability. Switching over between the 3 preset voltages can be done from the front panel, and an electronic switch-over system which eliminates undershoots is employed. As well as voltage setting, preset switching is possible by remote control while the output current can be increased by one-control parallel operation. The PR30-3W has a dual tracking function with positive and negative power outputs for a single voltage setting.



Features (PR-A series)

Low Ripple/Low Noise

By adopting the series regulator system, as well as suppressing ripple and noise to a very low level, a low temperature coefficient and superior electrical performance can be achieved.

Serial and Parallel Connection/Parallel Operation

The output voltage can be increased by serial connection, or the output current can be increased by parallel connection. With parallel operation, all outputs can be controlled from a master slave system.

OUTPUT ON/OFF switching

OUTPUT ON/OFF can be switched from the front panel.

Features (PR series)

Constant Voltage/Constant Current with Low Ripple/Low Noise

By adopting the series regulator system, as well as suppressing ripple and noise to a very low level, a superior electrical performance can be achieved.

Three Voltages can be Preset (with electronic switching)

The output voltage/current can be varied continuously, as required. Up to three output voltages which are used most frequently can be preset. Output voltage switching can be performed without any overshoot or undershoot. (PR30-3P, 6P)

Remote Voltage Control Possible

Four different output voltages, the

Constant Voltage/Constant Current LED display

In constant voltage operation, a green LED lights; in constant current operation, a red LED lights.

Floating System

The output terminals are floating, so that operation is possible as either a positive or negative power supply.

Constant Current Fine Adjustment Control (Factory-installed option)

A VOLTAGE FINE control for fine adjustment of the constant voltage can be also used for the fine adjustment of the constant current.

Applications

- Research and development
- Assembly ● Production line
- Education and training
- Production technology
- Aging tests

three preset voltages and a continuously variable voltage, can be selected using make-contact signals. The output voltage can also be controlled by an external voltage or external resistance. (PR-30P, 6P)

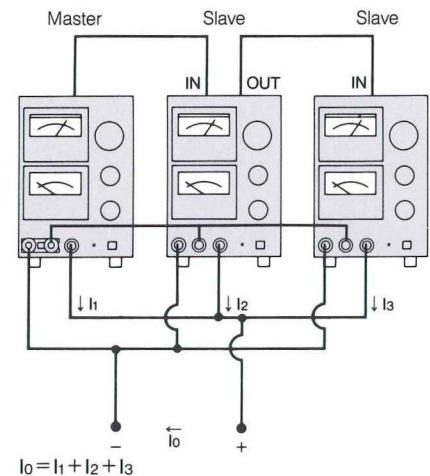
Parallel Operation/Serial Connection

With parallel operation in which the slave units are controlled from a single master unit, the output current can be increased, and with serial connection, the output voltage can be increased. (PR30-3P, 6P)

Floating System

The output terminals are floating, so that operation is possible as either a positive or negative supply (common to all three models).

PR Series parallel operation



By connecting units in parallel, the current can be increased. The output can be controlled from the master unit.

Dual-tracking

The PR30-3W employs a dual-tracking system, so that both the positive and negative output voltages and currents can be varied from the zero simultaneously. The absolute values of both the positive and negative outputs can be supplied at the same time. In addition, the positive and negative values can be set to the different values by releasing the tracking function. (PR30-3W)

Applications

- Research and development
- Assembly ● Production lines
- Education and training
- Production technology
- Aging tests

SPECIFICATIONS

Model	PR18-1.2A	PR18-3A	PR18-5A	PR36-1.2A	PR36-3A	PR70-1A	PR250-0.42A	PR30-3W	PR30-6P	PR30-3P
Output voltage	0~18V			0~36V		0~70V	0~250V	0~+30V 0~-30V	0~30V	
Output current	0~1.2A	0~3A	0~5A	0~1.2A	0~3A	0~1A	0~0.42A	0~3A	0~6A	0~3A
●Voltage regulation characteristics										
Line regulation	0.01%+2mV						2mV			
Load regulation	0.01%+2mV		0.1%+3mV	0.01%+2mV		2mV				
Ripple/noise	0.5mVrms					1mVrms	2.5mVrms	0.5mVrms		
●Current regulation characteristics										
Line regulation	2mA									
Load regulation	6mA	10mA	15mA	10mA	15mA	10mA				
●Meter										
Voltmeter	0~18Vf.s.			0~36Vf.s.		0~70Vf.s.	250V	+30V Changeable	30V	
Ammeter	0~1.2Af.s.	0~3Af.s.	0~5Af.s.	0~1.2Af.s.	0~3Af.s.	0~1Af.s.	0.42A	±3A Changeable	6A	3A
●Power consumption										
VA/Watts	60VA/45W	140VA/105W	230VA/175W	105VA/79W	250VA/185W	150VA/113W	185VA/145W	350VA/290W	370VA/290W	175VA/140W
●Line voltage										
Voltage	100/120/220/240VAC ±10% (max. 250V), 50/60Hz									
●Dimensions & Weight										
Dimensions	S size	M size	L size	S size	L size	M size	L size	LL size	LL size	L size
Weight	3.8kg	5.7kg	8.1kg	4.4kg	8.6kg	5.8kg	7kg	13kg	13kg	6.8kg

S size 104(W)×147(H)×180(D)mm Max. 108(W)×161(H)×200(D)mm M size 104(W)×147(H)×215(D)mm Max. 108(W)×167(H)×265(D)mm L size 138(W)×147(H)×230(D)mm Max. 142(W)×167(H)×290(D)mm LL size 210(W)×147(H)×245(D)mm Max. 214(W)×167(H)×320(D)mm

A variable-output, switching CV/CC power supply that's compact, lightweight and highly efficient.

PS Series constant-voltage, constant-current DC power supplies

PS6-60 6V/60A	PS36-10 36V/10A
PS6-120 6V/120A	PS36-20 36V/20A
PS10-35 10V/35A	PS36-30 36V/30A
PS10-70 10V/70A	PS60-6 60V/6A
PS20-18 20V/18A	PS60-12 60V/12A
PS20-36 20V/36A	PS60-18 60V/18A
PS20-54 20V/54A	



The PS Series of DC power supplies are switching type units featuring compact size, lightweight construction and superb reliability. These versatile, stand-alone models are equipped with digital displays and are designed for ease-of-use and safety above all. A number of built-

in protective functions guard against the possibility of damage. Ideal for rack mounting or incorporation into other pieces of equipment. They are available in three capacities: 360, 720 and 1,080 watts. The available voltage options—0-6V, 10V, 20V, 36V and 60V—allow for a choice of 13

different configuration possibilities. Compatibility with a variety of remote control as well as the GP-IB control system (with the optional GP-600) provides a wealth of possible applications.

COMMON SPECIFICATIONS

■ **Input voltage:** Single-phase AC 90—132V, 50—60Hz or AC 180V~250V, 50—60Hz

■ **Indicators**

Voltage indicator Display: 3-1/2 digit red LED
Accuracy: 0.1% rdg ±2-digit (23 ±5°C)
Temperature coefficient: ±100 ppm/°C (0—50°C)

Current indicator Display: 3-1/2 digit red LED
Accuracy: 0.5% rdg ±3-digit (23 ±5°C)
Temperature coefficient: ±200 ppm/°C (0—50°C)

■ **Protective devices**

- Over voltage protector:
Voltage setting range: Approx. 10% or more above rated voltage
Protector operation: Power relay interruption
- Over current protector: Power relay interruption at approx. 110%—130% of rated current
- Overheating protector: Power relay interruption at 100 ±5°C (heat sink)
- Thermal fuse: (Built-in thermal fuse) •Input fuse •Power relay interrupter

■ **Environmental conditions**

- Operating temperature range: 0—50°C •Operating humidity range: 30—80% RH
- Storage temperature range: -20—70°C •Storage humidity range: 20—80% RH

■ **Cooling system:** Forced air using fan, air intake grill on front panel

■ **Function**

- Output switch (auto-reset type) •Voltage and current limiter Switches •Preset OVP

■ **External dimensions**

Type I: 70(W)×124(H)×351(D) mm
Type II: 140(W)×124(H)×351(D) mm
Type III: 210(W)×124(H)×351(D) mm

■ **Accessories:** 2.0m AC power cord

Features

Compact, Lightweight, Highly Efficient

The PS Series uses a switching configuration, making possible a compact, lightweight design less than half as bulky and heavy as conventional power supplies. It is also highly efficient.

Digital Display of Voltage and Current

The voltage and current output levels are shown simultaneously by 7-segment red LED indicators. Checking output values is a snap.

GP-IB System Compatibility

The PS Series is equipped with controls for adjusting output voltage and current, several status signal outputs, output and power on/off switches and a remote/local selector. It is also compatible with the GP-IB control system (with the addition of optional GP-600).

Wide Variety of Applications

The output voltage and current can be regulated in a variety of ways, including external voltage control and external resistance control.

Low-noise

The motor of the cooling fan is linked to a temperature sensor that automatically reduces the fan speed when the load or temperature is low. This helps to prevent excess noise.

Front Air Intake

The PS Series is force cooled using air introduced via a grill in the front panel, making it suitable for high density rack mounting.

The front grill has a built-in air filter to prevent dust from getting inside the unit.

Digital Display

Easy-to-read 7-segment red LED indicators show voltage and current levels simultaneously. The 3-1/2 column autorange feature for voltage and current readings allows a maximum display resolution of 10mV and 10mA, respectively.

Applications

- Reliability testing of electronic parts
- Durability testing of motors and drivers
- Testing of populated circuit boards and electronic devices
- Testing of rechargeable batteries
- Semiconductor aging apparatuses
- Operation testing of HICs, etc.
- Battery substitution
- As a constant-current power supply for electrolytic capacitor formation, metal plating etc.

Safety Features

Fail-safe Function

To ensure complete safety, switching is inhibited (output off status) and the AC power relay is interrupted if any of the protective devices are triggered.

Output Over Voltage Protection (OVP)

Switching (oscillation) is inhibited should the output voltage exceed the OVP setting, cutting off output immediately.

Output Over Current Protection (OCP)

A protective circuit is triggered should the current exceed 110 percent of the rated amperage. Switching is immediately inhibited and the AC power relay is interrupted.

Overheating Protection (OHP)

Switching is inhibited and the AC power relay interrupted if the temperature of the semiconductor heat sink reaches approximately 100°C.

Input Power Supply Malfunction Protection

Should the input current be too high or too low, or if an internal malfunction should cause an over current condition, switching is inhibited and output stops.

Alarm (Power Supply Malfunction) Signal

If the power switch turns off due to output over current, input over voltage, input over current or the overheating protection circuit being triggered, an alarm signal is issued that shuts off output and interrupts the AC power relay.

Power Supply Interruption Signal

The power supply (power relay) can be interrupted using an external signal. This is useful for cases where a malfunction occurs at the user's side.

Rush Current Prevention Circuit

A rush current prevention circuit protects the unit against input surges that can occur when the power switch is initially turned on.

SPECIFICATIONS

Model	Output		CV (constant voltage) characteristics					CC (constant current) characteristics			Other		
	CV	CC	Ripple*1	Line regulation	Load regulation	Transient response*2	Rise/fall time	Ripple*3	Line regulation	Load regulation	Input current	External dimensions	Weight
	V	A	mV rms	0.05%+mV	0.1%+mV	m sec	m sec (Fully loaded)	mA rms	mA	mA	AC (100/200V) A	type	kg (approx.)
PS6-60	0~6	0~60	10	5	5	1	80/150	120	125	125	8/5	I	3.5
PS6-120		0~120	10	5	5	1	80/150	260	245	245	16/10	II	5.5
PS10-35	0~10	0~35	10	5	5	1	80/150	70	75	75	8/5	I	3.5
PS10-70		0~70	10	5	5	1	80/150	160	150	150	15/9	II	5.5
PS20-18	0~20	0~18	10	5	5	1	80/150	40	41	41	8/5	I	3.5
PS20-36		0~36	10	5	5	2	80/150	92	82	82	15/9	II	5.5
PS20-54		0~54	15	5	5	2	80/150	120	123	123	22/13	III	7.5
PS36-10	0~36	0~10	10	5	5	1	80/150	20	25	25	8/5	I	3.5
PS36-20		0~20	10	5	5	2	80/150	60	50	50	15/9	II	5.5
PS36-30		0~30	15	5	5	2	80/150	80	75	75	22/13	III	7.5
PS60-6	0~60	0~6	10	5	5	1	80/150	12	17	17	8/5	I	3.5
PS60-12		0~12	15	5	5	2	80/150	44	34	34	15/9	II	5.5
PS60-18		0~18	20	5	5	2	80/150	55	51	51	22/13	III	7.5

*1 At 5Hz—1MHz

*2 Time required for output voltage to return to within 0.1%+10mV of the setting value when output current is varied by 20—100% at 50—100% of rated output voltage.

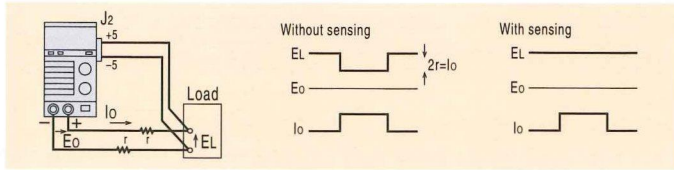
*3 Measured at 1—100% of rated output voltage.

APPLICATIONS

Remote Control

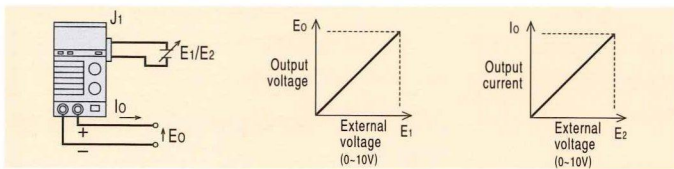
Remote Sensing

Prevents drops in voltage due to load and connection resistance and instability caused by contact resistance. Within ratings, compensates for drops in output voltage up to 1V on one side.



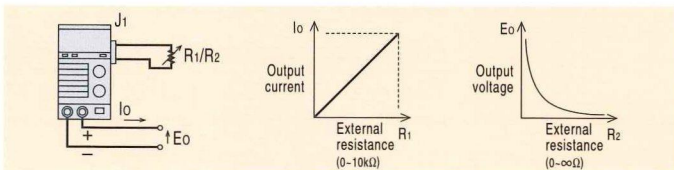
Output Voltage and Current Control Using External Voltage

Control item	Control voltage	Input impedance	Input common
Output voltage	0 ~ approx. 10V	Approx. 10 kΩ	+S terminal
Output current	0 ~ approx. 10V	Approx. 10 kΩ	+S terminal



Output Voltage and Current Control Using External Resistance

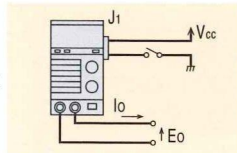
Control item	Control resistance		Current running through resistor	Input common
	Normal	Fail-safe		
Output voltage	0 ~ approx. 10kΩ	∞ ~ 0Ω	Approx. 1mA or less	+S terminal
Output current	0 ~ approx. 10kΩ		Approx. 1mA or less	+S terminal



Output On/Off Control

Control item	Control input signal		Input common
Output	On	Photodiode on	
	Off	Photodiode off	

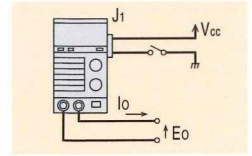
Output is turned on and off using a signal from an external source. The power supply can also be set for "fixed on" when the power is switched on.



AC Power On/Off Control

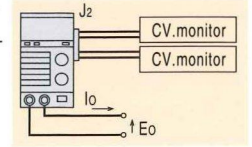
Control item	Control input signal		Input common
AC power relay	On	Photodiode on	
	Off	Photodiode off	

Power supply protection (the AC power relay) is turned on and off using a signal from an external source. (The power switch must be in the on position.)



CV/CC Monitor

- A monitor output of approximately 0V to 1/10 the rated voltage, corresponding to output voltages of 0V to the rated voltage, is output.

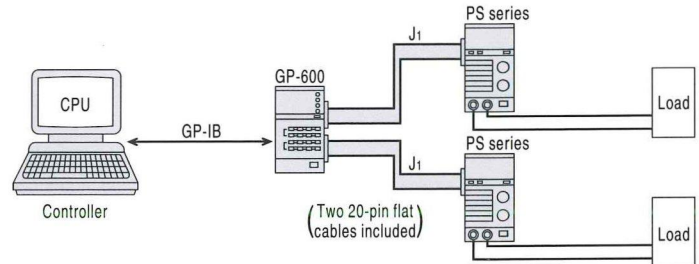


- A monitor output of approximately 0V to 10V, corresponding to output currents of 0A to the rated amperage, is output.

GP-IB Control System, GP-IB Adaptor: GP-600

Compatibility with the GP-IB control system can be achieved by connecting the GP-600 GP-IB adaptor to a PS Series power supply.

- One GP-600 adaptor can control two channels (two PS Series units).
- Output voltage and current can be set separately for each channel.
- Output on/off and power on/off (when the power switch is in the on position) control is supported.
- Status lead-backs for CV/CC mode, OVP on, power on and alarm on status are supported.



OPTIONS

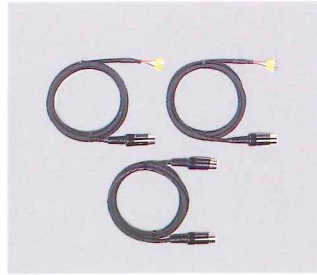
For PD series



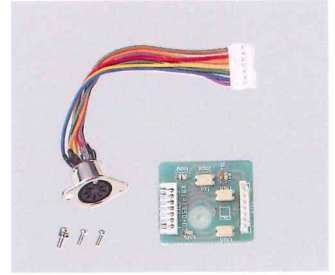
GP-610D
GPIB Adaptor



DT-611
I/O Adaptor



OP-14
Connection Cable



OP-12
EXT I/O Unit

For PWR series



GP-620
GPIB Adaptor

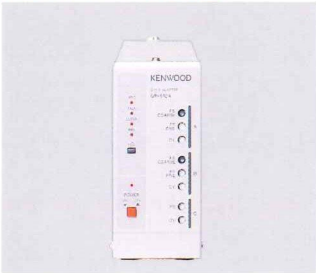


TA-60 (For PWR-P Series)
D Sub Modular Connector



RT-63 (For PAR Series)
Remote Controller

For PAR/PA series



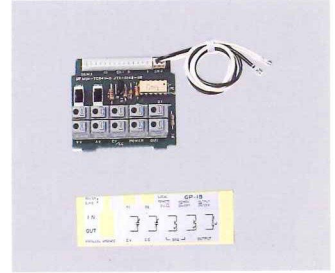
GP-610A
GPIB Adaptor



GP-620
GPIB Adaptor



OP-15
Connection Cable



OP-13
EXT I/O Unit



TA-60 (For PAR Series)
D Sub Modular Connector

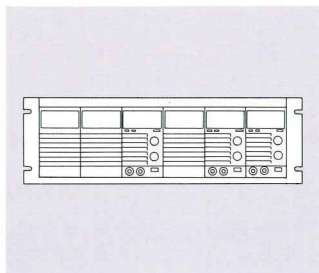


RT-63 (For PAR Series)
Remote Controller

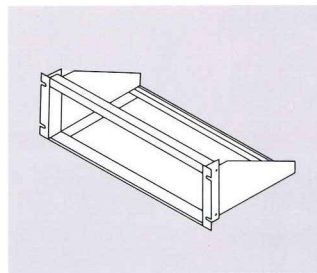
For PS series



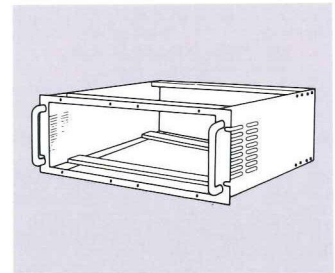
GP-600
GPIB Adaptor



RK-600E
For PS series

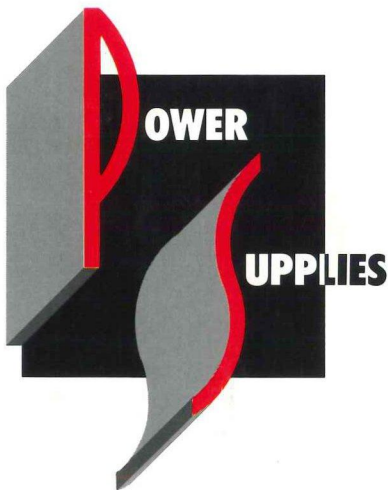


RK-604E (EIA Standard)
For PA, PR, PWR Series



RK-601 (EIA Standard)
For PD Series

KENWOOD



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*Specifications and design subject to change without notice.